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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/732,924	12/10/2003	Richard G. Washington	COVI:005	7369

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EXAMINER

GILMAN, ALEXANDER

ART UNIT PAPER NUMBER

2833

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/732,924	<b>Applicant(s)</b> WASHINGTON ET AL.	
	<b>Examiner</b> Alexander D. Gilman	<b>Art Unit</b> 2833	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-12,14-50 and 52-98 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 97 and 98 is/are allowed.
- 6) ☐ Claim(s) 1-7,9-12,14-39,42-50 and 52-96 is/are rejected.
- 7) ☐ Claim(s) 40 and 41 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims, **82-87** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakiyama et al in view of Hannah and Williams, Jr.

With regard to claims 82- 84, Wakiyama et al (US 6,392,693) disclose a slip ring apparatus, comprising:

a first slip ring component (9a), said first slip ring component comprising a first interface surface and at least one first dynamic interface component; and  
a second slip ring component (9b), said second slip ring component comprising a second interface surface and at least one second dynamic interface component.

Wakiyama et al (US 6,392,693) disclose all of the limitations except for explicitly teaching serial digital signal.

Hannah (US 5,568,192) teaches a digital camera and serial digital signal (Fig. 4) or analog signal.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a digital camera transferring digital serial signal in Wakiyama et al, as taught by Hannah , to transfer high resolution data.

Wakiyama et al-Hanna et al do not disclose that said printed circuit board comprises integrated circuitry configured to process said at least one signal.

Williams, Jr (US 4,404,560) disclose that said printed circuit board comprises integrated circuitry (19, 16) configured to process said at least one signal.

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Wakiyama -Sobhani et al with integrated circuitry configured to process said at least one signal as taught by Williams, to encode the angular position of the rotating components

With regard to claims 85-87, Wakiyama et al disclose the structure, as applied to claims 82-84 above, which operates according to steps claimed.

Claims, **88-92** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakiyama et al in view of Hannah further in view of Sobhani et al.

Wakiyama et al in view of Hannah disclose all of the limitations except for the first and the second slip ring components comprising a printed circuit board.

Sobhani disclose sa slip ring comprising a printed circuit board (27,28).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a printed circuit board in Wakiyama et al -Hannah, as taught by Sobhani et al to effectively dispose a plurality of conductors on the board's surface.

With regard to claim 88, 92 Wakiyama et al –Sobhani et al disclose that said printed circuit board of said first slip ring component comprises control circuitry ( 13) for said drive actuator (6, 7).

.Claims **15- 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakiyama et al in view of Sobhani and further in view of Tanaka.

With regard to claims 15, 16, Wakiyama et al discloses (Fig. 1) a slip ring apparatus (9), comprising:

a first slip ring component (9a), said first slip ring component comprising a first

interface surface and at least one first dynamic interface component; and

a second slip ring component (9b0 , said second slip ring component comprising a

a second interface surface and at least one second dynamic interface component.

Wakiyama et al do not explicitly disclose that said at least one of said first and second slip ring components that is rotating about said axis of slip ring rotation relative to the other of said first and second slip ring components comprises a printed circuit board

. Sobhani et al disclose a slip ring comprising a printed circuit board (27-28).

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a printed circuit board in Wakiyama et al, as taught by Brundage, to effectively dispose a plurality of conductors on the board's surface.

Wakiyama et al-Sobhani et al do not disclose that said printed circuit board comprises integrated circuitry configured to process said at least one signal.

Tanaka et al (US 4,563,683) disclose that said printed circuit board comprises integrated circuitry (141, 145, 151, 152) configured to process said at least one signal.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Wakiyama -Sobhani et al with integrated circuitry configured to process said at least one signal as taught by Tanaka et al , to encode the angular position of the rotating components

With regard to claims 17, 18, 19, 21, 22 Wakiyama et al when modified by Sobhani et al-Tanaka et al discloses (Wakiyama et al, Fig. 1) a forward or return optical block control signal, an optical block image signal, or an optical block power signal;

that first slip ring component is configured to be coupled to an optical block (Wakiyama et al, Fig.1) so that said optical block is rotatable with said Grst slip ring component relative to said second slip ring component;.

With regard to claim 20, Wakiyama et al when modified by Sobhani et al-Tanaka et al discloses (Wakiyama et al, Fig. 1) a drive actuator.

With regard to claim 22 ,Wakiyama et al when modified by Sobhani et al-Tanaka et al discloses (Brundage, r.n.110) component comprises at least one of a conductive trace or a contact pad.

With regard to claims 23 Tanaka et al disclose (340) capacitive sensor components of a position sensor mechanism.

Claims 15, 16, 82-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sobhani in view of Tanaka et al

Sobhani (US 5,484,294) discloses a slip ring apparatus, comprising:  
a first slip ring component (11), said first slip ring component comprising a first

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interface surface and at least one first dynamic interface component; and  
a second slip ring component (12), said second slip ring component comprising a  
a second interface surface and at least one second dynamic interface component.  
wherein said at least one of said first and second slip ring components that is  
rotating about said axis of slip ring rotation relative to the other of said  
first and second slip ring components comprises a printed circuit board.(27, 28).

Sobhani et al do not disclose that said printed circuit board comprises integrated circuitry configured to process said at least one signal.

Tanaka et al (US 4,563,683) disclose that said printed circuit board comprises integrated circuitry (141, 145, 151, 152) configured to process said at least one signal.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Sobhani et al with integrated circuitry configured to process said at least one signal.

as taught by Tanaka et al, to encode the angular position of the rotating components  
With regard to claims 85—87, Sobhani et al –Tanaka et al disclose the device which is operated using steps claimed.

Claims 17-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sobhani in view of Tanaka et al and further in view of Wakiyama et al

With regard to claims 17, 18, 19, 21, 22 Sobhani does not disclose a forward or return optical block control signal, an optical block image signal, or an optical block power signal;  
that first slip ring component is configured to be coupled to an optical block so that said optical block is rotatable with said first slip ring component relative to said second slip ring component;  
a drive actuator.

Wakiyama et al disclose that features as applied above to claims 17-22 being rejected over Wakiyama et al in view of Brundage.

With regard to claim 22, Sobhani disclose the component comprising at least one of a conductive trace or a contact pad.

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With regard to claim 23, Sobhani when modified by Wakiyama et al disclose all of limitations including (Tanaka et al) conductive segments being positioned to interact with each other without contacting to form a position sensor mechanism.

With regard to claims 24-25, Sobhani disclose that said first peripheral sealing surface of said first housing (11) component rotatably and sealably mates with said second peripheral surface of said second housing (12) component to form a dynamic seal around the periphery of said slip ring housing.

Claim 26, 78-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sobhani in view of Tanaka et al -Wakiyama et al - and further in view of Mitsnya et al.

Sobhani when modified by Wakiyama et al –Tanaka et al does not disclose ferro-fluidic seal.

Mitsnya et al (US 4,424,974) disclose ferro-fluidic seal.

Therefore it would be obvious to use ferro-fluidic seal, as taught by Mitsnya et al. to effectively seal the rotating parts.

Claims 27, 28, 30- 36, 66, 67, 69, 70, 74-77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakiyama et al in view of Sobhani et al and further in view of Tanaka et al

With regard to claims 27, 28, 30, 74-77, Wakiyama et al. disclose camera system, comprising:

a first slip ring apparatus, said first slip ring apparatus comprising:

a moving first slip ring component (9a), , and

a stationary second slip ring component (9b) , said second slip ring component

comprising a second slip ring substrate that comprises a circular platter

having a second planar interface surface defined thereon, and at least one

second dynamic interface component supported by said second slip ring

component substrate,

an optical block (6, 4, 1) coupled to said first slip ring apparatus so that it rotates with said

first slip ring component relative to said second slip ring component, said

first slip ring component being coupled between said optical block and

said second slip ring component:

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a first drive actuator (8) .

a feedback circuitry on one of slip ring component.

Wakiyama et al do not disclose that said first slip ring component substrate comprises a printed circuit board with a feedback circuitry being integrated .

Sobhani et al disclose a slip ring comprising a printed circuit board (100a, b).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a printed circuit board in Wakiyama et al, as taught by Brundage to effectively dispose a plurality of conductors on the board's surface.

Sobhani et al do not disclose that said printed circuit board comprises integrated circuitry configured to process said at least one signal.

Tanaka et al (US 4,563,683) disclose that said printed circuit board comprises integrated circuitry (141, 145, 151, 152) configured to process said at least one signal.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Wakiyama- Sobhani et al with integrated circuitry configured to process said at least one signal as taught by Tanaka et al , to encode the angular position of the rotating components

With regard to claim 28, 32, Wakiyama et al –Tanaka-Sobhani disclose that said printed circuit board of said first slip ring component comprises control circuitry ( 13) for said drive actuator (6, 7).

With regard to claim 31, 33 Wakiyama et al disclose that said at least one serial digital signal comprising a forward or return optical block (1) control signal, an optical block image signal, and an optical block power signal;

With regard to claim 34, Wakiyama et al disclose that one of contacts being a brush contact (forming a sliding connection completing a circuit between a fixed and a moving conductor).

With regard to claims 35, 36 Wakiyama et al –Tanaka-Sobhani disclose (Tanaka et al) a position sensor mechanism

With regard to claims 66, 67, 69, 70 Wakiyama et al –Tanaka-Sobhani disclose that said printed circuit board of said first slip ring component comprises control circuitry



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Claims 64, 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakiyama et al in view of Tanaka-Sobhani and further in view of Hannah.

Wakiyama et al - Tanaka-Sobhani disclose all of the limitations except for explicitly reaching serial digital signal.

Hannah (US 5,568,192) teaches a digital camera and serial digital signal (Fig. 4).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a digital camera transferring digital serial signal in Wakiyama et al, as taught by Hannah, to transfer high resolution data.

Claim 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakiyama et al in view of Tanaka-Sobhani and further in view of Yamashita et al.

Wakiyama et al- Tanaka-Sobhani do not disclose that said first drive actuator comprises a voice coil servo mechanism.

Yamashita et al.(US 6,756,759) disclose (Fig. 91) a drive actuator comprising a voice coil servo mechanism.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a a voice coil servo mechanism.in Wakiyama et, as taught by Yamashita to effectively detect aposition of the camera.

.Claims 37- 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wakiyama et al in view of Sobhani as applied to claim 28, 30 above, and further in view of Sobhani and further in view of Mitsnya Mitsnya et al (US 4,424,974) disclose ferro-fluidic seal

Therefore it would be obvious to use ferro-fluidic seal, as taught by Mitsnya et al. to effectively seal the rotating parts.

Claims 71, 93-96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakiyama et al, Sobhani, Tanaka et al Yamashita, Mitsnya et al as applied above to respective claims 15-39.

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Wakiyama et al, Sobhani, , Tanaka et al, Yamashita, Mitsnya et al disclose the structures which are operat using steps claimed.

Claims **78-80** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sobhani in view of Wakiyama et al further in view of Mitsnya et al.

Sobhani when modified by Wakiyama et al discloses all of the limitations except for ferro-fluidic seal.

Mitsnya et al (US 4,424,974) disclose ferro-fluidic seal.

Therefore it would be obvious to use ferro-fluidic seal, as taught by Mitsnya et al. to effectively seal the rotating parts.

Claim **81** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sobhani in view of Wakiyama et al -Mitsnya et al and further in view of Shin et al

Sobhani when modified by Wakiyama et al-Mitsnya discloses all of the limitations except for high speed differential serial digital signal.

Shin et al teaches a serial differential digital signal signal in high speed video input from digital cameras (col. 1, lines39-43).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a digital camera transferring digital serial signal in Wakiyama et al, as taught by Shin et al, to transfer high resolution data at high speed.

Claims **1-7,9-12, 14, 42-50,52-61, 72, 73** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakiyama et al in view of Sobhani et al and further in view of Hanna et al as applied to the respective claims above and futher in view Brophy et al.

Wakiyama et al in when modified byf Sobhani et al and Hanna et al do not disclose explicitly serializer circuitry being integrated within at least one of said first or second slip ring components.

The prior art applied to electro-optical apparatuses inherently should include serializer circuitry (For example, Hanna et al r.n. 412, 414) for conversion from analog, optical form to digital form.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide serializer circuitry being integrated within at least one of said first or second slip ring components,

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since it has been held that would be no invention in shifting location of parts to a different position since the operation of the device would not be thereby be modified In re Japikse, 86 USPQ 70.

For example Brophy et al disclose (col. 12 , lines 30-32) serializer circuitry being integrated within PCB.

#### ***Allowable Subject Matter***

Claims 97, 98 are allowed

Claims 40, 41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

No prior art has been found to anticipate or render obvious the presently claimed subject matter.

Specifically, none of the prior art of record discloses the combination of the limitations presented including the camera system further comprising a second slip ring apparatus coupled to said optical block and a second drive actuator coupled to said second slip ring apparatus to impart rotation to said optical block.

#### ***Response to Arguments***

Applicant's arguments with respect to claims 1, 15, 27, 82,85,93,96 have been considered but are moot in view of the new ground(s) of rejection.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

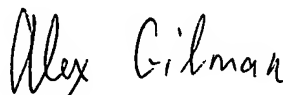
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander D. Gilman whose telephone number is 571 272-2004. The examiner can normally be reached on Monday-Friday, 10:30 a.m. - 8:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A. Bradley can be reached on 571 272-2800 ext. 33. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

04/29/2005



**ALEXANDER GILMAN**  
**PRIMARY EXAMINER**